

MINE EXIT.

968,504.

FIG 1.

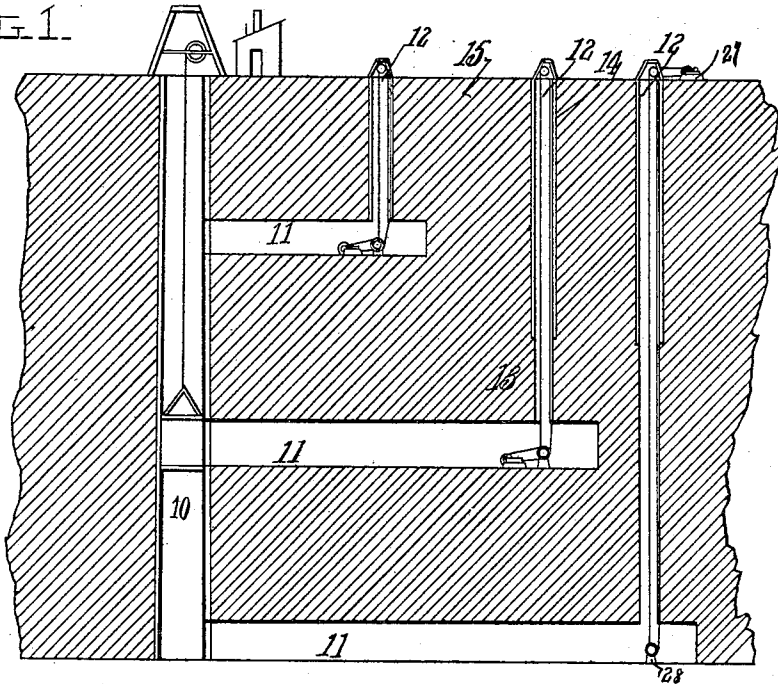


FIG. 3.

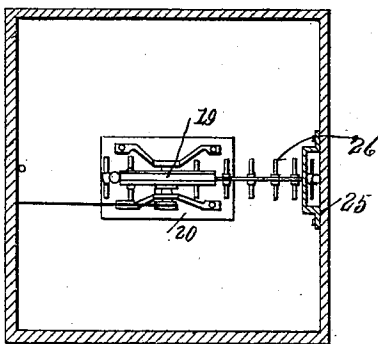
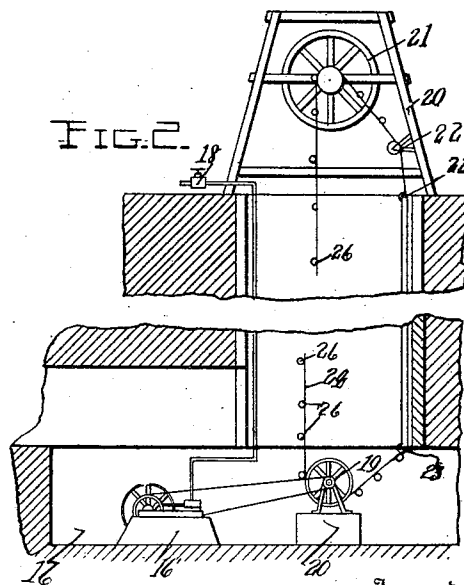


FIG. 2.



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UNITED STATES PATENT OFFICE.

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MINE-EXIT.

968,504.

Specification of Letters Patent.

Patented Aug. 23, 1910.

Application filed April 13, 1910. Serial No. 555,166.

To all whom it may concern:

Be it known that I, CLARENCE W. WHITE, a citizen of the United States, residing at Lacon, in the county of Marshall, State of Illinois, have invented certain new and useful Improvements in Mine-Exits; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to mines and mining and has special reference to a safety shaft and the equipment thereof adapted to permit the escape of miners from the different levels in the event of any accident in the mine.

One object of the invention is to provide a novel form of exit or safety shaft wherein certain equipment will be located which will greatly facilitate the escape of miners from mines wherein accidents have taken place.

Another object of the invention is to provide an improved mechanism for use in such shafts, the mechanism being so arranged that it may be placed in a shaft having a diameter but little greater than that of a man's body so that shafts of relatively small diameter may be used for exit or safety shafts.

With the above and other objects in view, the invention consists in general of an exit shaft of relatively small diameter provided with certain improved mechanism arranged to aid the escape of miners from the different levels to the top of said shaft.

The invention further consists in certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawings, and specifically set forth in the claims.

In the accompanying drawings, like characters of reference indicate like parts in the several views, and:—Figure 1 is a section through a mine provided with this invention. Fig. 2 is an enlarged detail section through one of the safety shafts. Fig. 3 is a plan view from the ground of such a safety shaft.

The numeral 10 indicates the main shaft of the mine and from this main shaft extend one or more drifts or tunnels 11 rising from each of which are safety shafts 12 positioned at convenient points along these drifts or tunnels. These safety shafts are

intended primarily for the purpose of conveying men from the drifts to the tunnels and not for the transport of heavy material such as ore so that these shafts are of relatively small diameter, being but little larger than sufficient to accommodate the body of a single man.

It is the intention in carrying out this invention that the safety shafts shall be sunk from above by the usual drilling mechanism employed for drilling wells, the mechanism being equipped with the proper sized drill or boring tool and these shafts may or may not be cased according as to whether the ground wherethrough they run is soft or hard. In the present instance one of these shafts is shown as uncased at the lower end where it runs through rock 13 while at the upper end it is provided with a casing 14 where it is supposed to run through soft ground as at 15. Where these safety shafts are sunk at the time of running the drifts it is preferred that, as shown in Fig. 2, a pit 16 be made at the bottom of the shaft and in this pit is located an engine 16' preferably operated by steam supplied from pipes leading to the surface and controlled by a valve 18 at this point. This engine serves to drive a wheel 19.

At 20 is indicated a headwork frame which supports a wheel 21 and at 22 and 23 are indicated respectively top and bottom guide wheels, these latter being positioned adjacent one side of the respective shaft. A chain 24 runs around these various wheels and the engine is so arranged that the portion of the chain indicated in the middle of the shaft runs upward while that toward the side of the shaft runs downward. A casing 25 is held within the shaft and in this casing runs the downwardly moving portion of the chain. The chain is equipped at suitable intervals with cross bars 26 which serve as hand grips and foot holds and the casing is of sufficient size to permit these cross bars passing freely down through said casing.

In one form shown in Fig. 1 it is intended to indicate an emergency safety shaft such as would be sunk in a mine after an accident. In this form the engine, indicated at 27, is located at the surface and the lower wheel is supported in a frame 28. It will thus be seen that the two forms are merely a reversal of the positions of the engine and idler wheel. This latter form is designed

so that when an accident takes place safety or escape shafts may be rapidly sunk, owing to their small diameter, and the mechanism quickly positioned for permitting the escape of imprisoned miners.

In using either of the forms let it be supposed that an accident has occurred in the mine and a portion of the mine has been, by this accident, cut off from the main shaft.

10 The miners go to the nearest safety shaft and the engine is started. As the miners come to the safety shaft they one by one grasp the hand grips and steady themselves by placing their feet on a lower grip. By

15 the movement of the chain they are drawn quickly to the top where they may step off to the solid ground and thus be released from the mine. In case the mine is not already equipped in this manner these safety shafts

20 are at once sunk to that part of the mine wherein the miners are imprisoned and the lower frame and its wheel lowered down the shaft. It may be secured in position either by the miners below or by men going down

25 from the top of the shaft. The chain is then placed in position with its casing and the device is ready for use as before described.

There has thus been provided a simple and efficient device of the kind described and

30 for the purpose specified.

Having thus described the invention, what is claimed as new, is:—

1. A mine having a main shaft, a drift or

tunnel leading therefrom, an exit shaft leading from said drift or tunnel to the surface, 35 an endless cable disposed with one lead thereof approximately in the center of said exit shaft and extending therethrough, supporting means and operating means for said 40 endless cable, and means at one side of said exit shaft maintaining the other lead of said cable at said side of said exit shaft.

2. A mine having a main shaft, a drift or tunnel leading therefrom, an exit shaft leading from said drift or tunnel to the surface, 45 an endless cable disposed with one lead thereof approximately in the center of said exit shaft and extending therethrough, supporting means and operating means for said endless cable, and a guiding and shield duct 50 at one side of said exit shaft through which the other lead of said cable extends.

3. A mine having a main shaft, a drift or tunnel leading therefrom, an exit shaft at a distance from the main shaft leading from 55 said drift or tunnel to the surface and means in said exit shaft to facilitate the escape of persons therethrough from said drift or tunnel to the surface.

In testimony whereof, I affix my signature, in presence of two witnesses. 60

CLARENCE W. WHITE.

Witnesses:

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